Washington Park Arboretum

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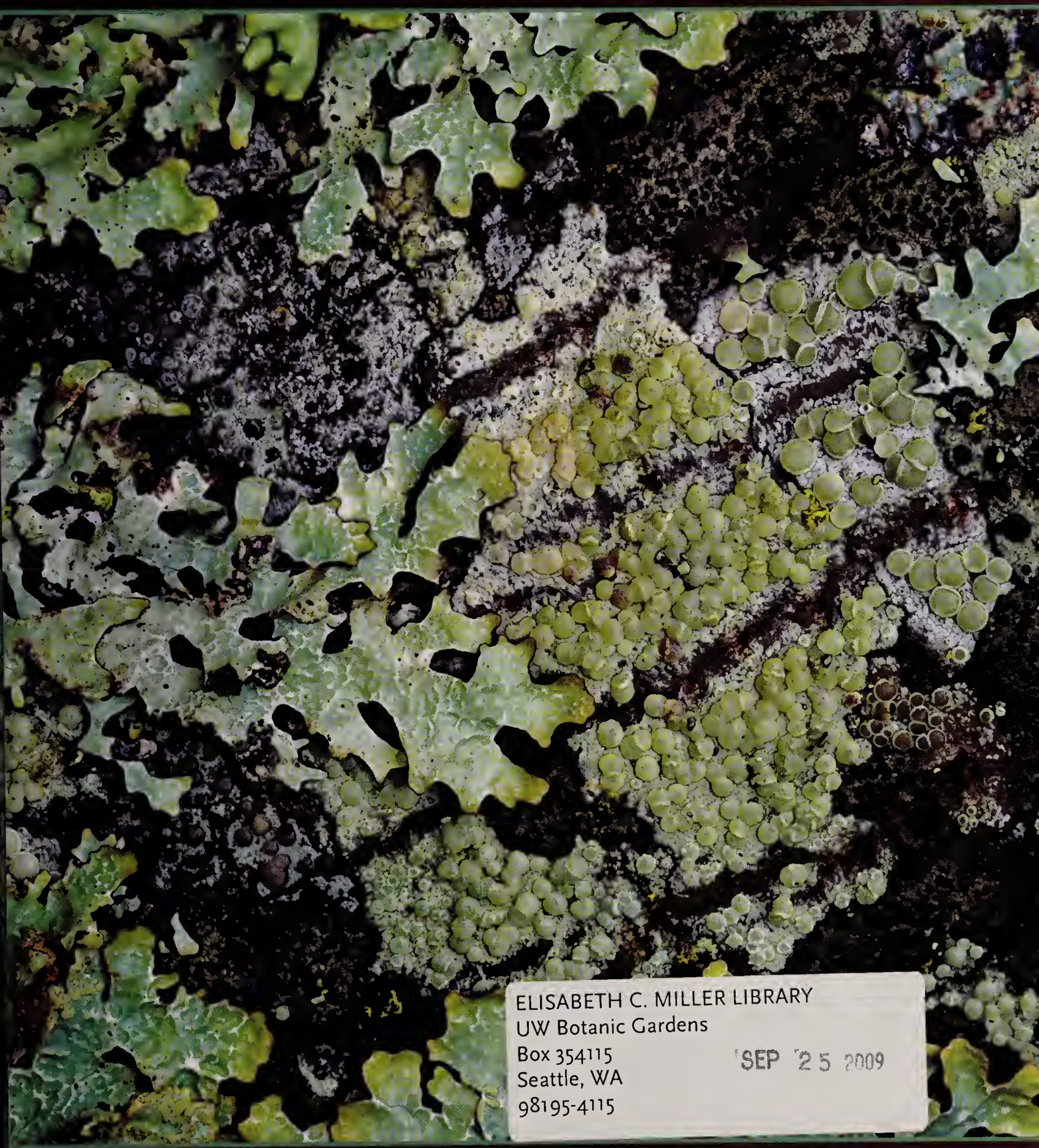

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Published by the Arboretum Foundation

Fall 2009

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Washington Park Arboretum

The Arboretum is a 230-acre dynamic garden of trees and shrubs, displaying internationally renowned collections of oaks, conifers, camellias, Japanese and other maples, hollies and a profusion of woody plants from the Pacific Northwest and around the world. Aesthetic enjoyment gracefully co-exists with science in this spectacular urban green space on the shores of Lake Washington. Visitors come to learn, explore, relax or reflect in Seattle's largest public garden.

The Washington Park Arboretum is managed cooperatively by the University of Washington Botanic Gardens and Seattle Parks and Recreation; the Arboretum Foundation is its major support organization.

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2300 Arboretum Drive East, Seattle, WA 98112
206-325-4510 voice / 206-325-8893 fax
gvc@arboretumfoundation.org
www.arboretumfoundation.org
Office hours: 8:30 AM—4:30 PM weekdays
Gift shop hours: 10 AM—4 PM daily

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206-684-4556 voice / 206-684-4304 fax

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Fall 2009 Volume 71. Issue 3.

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ISSN 1046-8749.

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ABOVE: The surface of a bushtit's nest in West Seattle's Lincoln Park is covered in mosses and the lichens *Usnea* and *Parmelia*. (Photograph by Richard Droker)

ON THE COVER: Bark on a bigleaf maple (*Acer macrophyllum*) is covered with the common foliose lichen *Parmelia sulcata* and a mosaic of crustose lichens, including *Leconora confusa*. (Photograph by Richard Droker)

Connections

What a glorious summer it has been! It was a time to make new connections and to strengthen and renew some valued old ones.

I made two summer trips, the first one to visit my frail father and my family back East. Dad was my first horticulture mentor, and loves to hear about my P-Patch and what we are doing here in the Arboretum. The second trip was to the Baltic Coast of eastern Germany to meet my daughter's in-laws. Her husband is the oldest of nine and his dad is the youngest of eight, so I met *60* new relatives while I was there. I especially enjoyed visiting Uncle Hanno, the beekeeper, and seeing his garden and honey production shed. Many family members craft art pottery and sell it to the summer tourists in a seaside market. So, I met those who do their family's historic craft and are still based in the villages nearby—and those who came in from Berlin, the US and even West Africa to assist with the summer pottery market. It is such a sign of our world that this family was both intensely local and widely international all at the same time, and that some members follow their ancient craft, while some are modern techno-geeks.

And, just as I had the chance to personally renew old ties and make many new ones this summer, we in the Arboretum have spent the summer doing the same. Our celebration of the 75th anniversary of the Arboretum was a time to reconnect with many old friends of this place, including picnic attendee Jean Witt whose late husband, Joe, was the Curator here for many years. But, it was also a time to bring in many new visitors to enjoy the art, ice cream sundaes, walks, kayak trips, and other special activities we held to celebrate our anniversary and introduce people to what is going on here. We also hosted a well-attended All Units meeting of the leaders of our 29 auxiliary volunteer groups to bring them up to date on all that is happening here and to encourage them to be more closely involved with our activities. Several individual units came for presentations and toured the Pacific Connections Garden—and gave us support for our next Pacific Connections Garden, the Gateway to Chile.

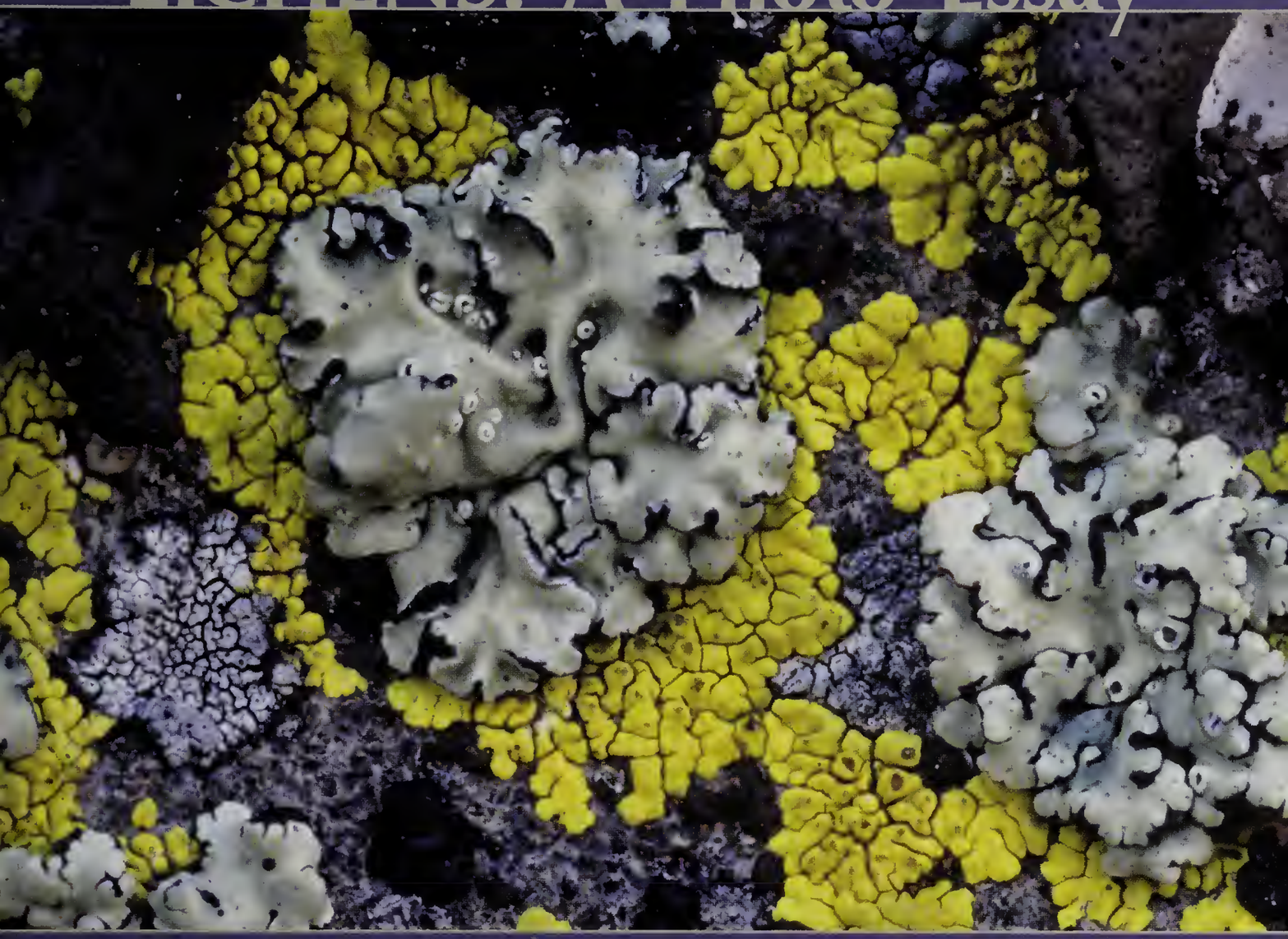
As our government partners at the University of Washington and the City of Seattle face deep budget cuts from the recession, it will be even more important for us at the Foundation and our volunteers and friends to pull together to conserve this special place and to continue to work with our partners to make it better. The friendships and connections that were made and renewed during the summer will need to be nurtured and cultivated and put to good use in the future. Together we can do so much for this special place for trees.

Cheers to you all,

Paige Miller

Paige Miller, Executive Director,
Arboretum Foundation

LICHENS: A Photo Essay



TEXT AND PHOTOGRAPHS BY RICHARD DROKER

"There is a low mist in the woods. It is a good day to study lichens."
—Henry David Thoreau

The true nature of lichens has been known for less than 150 years. In 1867 the Swiss microscopist Simon Schwendener proposed the "dual hypothesis"—that lichens are not autonomous plants, but instead are intimate combinations of fungi with algae and cyanobacteria. The word symbiosis, which describes these intimate combinations, was coined 12 years later by Heinrich Anton de Bary, a German mycologist working on lichens, but the dual hypothesis was not fully accepted until well into the 20th century. It is now evident that over geologic time the lichen association has evolved independently several times within different fungal lineages. Between 15,000 and 20,000 species of lichens exist worldwide, of which perhaps 1000 are to be found in Washington State.

The scientific name of a lichen species actually designates only the fungal partner, termed the "mycobiont." The great majority of these "lichenized" fungi belong to the phylum Ascomycota, which also includes the cup-

ABOVE: A community of lichens on basalt in Washington's Schnebley Coulee, including yellow *Pleopsidium chlorophanum*, gray *Rhizoplaca melanophthalma* and dark-brown *Umbilicaria phaea*.

ABOVE: Figure 1. Lichenologist Katerine Glew examines red alders (*Alnus rubra*) covered in lichens and bryophytes in the Cedar River Watershed.

fungi, morels and truffles. In nature they are almost never to be found in an independent "non-lichenized" state. In pure laboratory culture, they resemble mold. The characteristic lichen form will emerge when the correct alga or cyanobacteria is introduced.

Every lichen has its unique species of fungus. In contrast, the many thousands of mycobiont fungi associate with only 100 or so algal or cyanobacterial partners, termed "photobionts." (Lichens with cyanobacterial photobionts are termed "cyanolichens." Some lichens contain both an alga and a cyanobacteria.) Many photobiont species also may be found living independently in nature, although their appearance and biochemistry is altered within lichens.

In most lichens, the photobiont cells are restricted to a layer analogous to the chloroplast-rich layer of the leaves of plants, where threadlike fungal "hyphae" of the mycobiont envelop and, in some cases, penetrate their cell walls. A large percentage of the nutrients that the photobiont produces by photosynthesis are extracted by the mycobiont, which in turn provides a suitable environment for the photobiont. The degree to which the relationship is mutualistic or parasitic may be disputed, but together the partners can flourish in habitats hostile to either alone. Indeed, there are polar and alpine regions where a large percentage of the photosynthesis, upon which all life depends, is accomplished by lichens. The only multi-cellular life forms to be found on the southernmost rocks that pierce the Antarctic icecap are lichens. In 2005 a European Space Agency satellite carried the lichen *Rhizocarpon geographicum* into the vacuum of space, where it survived prolonged exposure to wide temperature fluctuations and UV and cosmic radiation.

On an excursion across the Cascades our friends from the East Coast were taken by the

ABOVE: Figure 2. Bigleaf maples (*Acer macrophyllum*) in the Cedar River Watershed festooned with *Usnea filipendula*. RIGHT: Figure 3. The fruticose lichen *Letharia columbiana* displays dark-brown apothecia.

beautiful stands of birches with mottled white trunks they were seeing along the highway (Figure 1, page 4). They were surprised to discover that in fact those "birches" were actually red alders (*Alnus rubra*)—the same red alders they had seen in Seattle—although in the city their bark appeared gray. Away from the city, red alder bark is often completely obscured by communities of lichens (many of them mottled white in color), as well as various mosses and liverworts. It is interesting how often we are unaware of these lichens, given their ubiquity on wood, rock and soil, as well as bark. In the city, sulphur dioxide and other pollutants are deleterious to many of those lichens, and only a few pollution-tolerant species appear. Indeed, the presence or absence of particular lichen species with increasing sensitivities to pollutants are used to produce air quality maps by drawing contours where those pollution-sensitive species first occur as one moves away from cities or other sources of pollution.

As with red alder, bigleaf maples (*Acer macrophyllum*) are particularly hospitable to epiphytes, as may be seen in the photograph on the "Bulletin's" cover. Two basic lichen growth forms are exhibited here. The branching pale green lichen, *Parmelia sulcatas* is quite tolerant of air pollution, very common (even on trees along busy city streets), and grows out above the bark substrate to which it is attached by threadlike "rhizines." As it has a somewhat leaf-like growth form, this lichen is designated "foliose." Its structure usually consists of upper and lower surficial "cortex" layers of densely packed fungal cells, surrounding a loose net of fungal hyphae, the

"medulla." The "photobiont" layer, cells of green algae in *Parmelia*, is immediately below the upper cortex. In the same photograph we also see a mosaic of lichens that does not extend upward above the surface of the bark to which the lichens are appressed. Lichens with this growth form are designated "crustose." As they lack a lower cortex, crustose lichens are attached to their substrate along the base of their "medullae." The numerous round spots of different colors that we see in the cover photograph are "apothecia," fruiting bodies analogous to the orange cup fungi one finds on the ground in the fall. Few crustose lichens are covered in popular books, as they are difficult to identify without microscopy.

"Fruticose" lichens comprise the third major growth form. They tend to look rather bushy, either growing upward or hanging pendant from their substrate. As the "branches" of these lichens tend to be cylindrical rather than flattened in cross section, distinct upper and lower surfaces may not be distinguished. The bigleaf maple in Figure 2, page 5, is festooned with a foliose lichen of the *Usnea filipendula* group.

TOP LEFT: Figure 4. The salt spray and upper intertidal zones on Lopez Island, with orange *Xanthoria candelaria* on rocks frequented by birds; across the background cliff is a black band of *Verrucaria maura*. ABOVE: Figure 5. *Cladonia furcata* growing on soil at Deception Pass, intermixed with *Sedum spathulifolium* and several mosses.

Identification of species within this genus can be tricky, but it is easy to confirm a lichen as an *Usnea* by stretching it. The outer layers, cortex and medulla, will separate and reveal a central rubbery cord, unique to the genus Usnea.

Another fruticose lichen is *Letharia columbiana*, which—with its sister species *Letharia vulpina*—is quite common, particularly on the east slope of the Cascades. This lichen pair illustrates how different lichens cope with the unique problem reproduction presents to a dual organism. The dark-brown, dish-like bodies on the *Letharia columbiana* in Figure 3, page 5 are fruiting bodies, "apothecia", that produce great numbers of spores sexually. These cannot begin to develop into lichens without the presence of the appropriate photobiont, in this case the green alga *Trebouxia*. In contrast, *Letharia vulpina* has entirely dispensed with sexual reproduction and produces vegetatively tiny balls of *Trebouxia* cells surrounded by fungal hyphae. These balls, called "soredia," can develop into lichens if they land on a suitable substrate. As soredia are released in tremendous numbers, their photobiont cells may be pilfered by the germinating spores of other lichen mycobionts for which that algal species is an appropriate partner. To hedge their bets, many lichens exercise both sexual and vegetative reproduction. Another characteristic of *Letharia* species is their production of vulpinic acid—a yellow pigment that has been used as a dye, and as a poison as well. It is one of many "lichen compounds," chemicals that are found only in lichens.

One of the largest and most varied genera of lichens in the Pacific Northwest is *Cladonia*,

ABOVE: Figure 6. Orange *Lecidia lapicidia* and other crustose lichens, as well as a few dark *Umbilicaria*, on a rock near Silver Lake in Western Washington's Olympic Mountains.

for which a key for determination of species would run to 20 or more pages. *Cladonias* are two-stage lichens that begin as a primary vegetative body, or "thallus," of small, scale-like lobes called "squamules." A secondary thallus usually follows, consisting of hollow stalks called "podetia." The branching podetia of *Cladonia furcata* are seen in Figure 5, page 6. Tree trunks and stumps that appear, when wet, a light gray or green, on close examination may be seen to be covered by innumerable *Cladonia* squamules (and/or a "dust lichen," a *Lepraria* species). Small, gray-green goblets found on logs and soil are the podetia of several *Cladonia* species. Bright-red apothecia top the podetia of some species, for example *Cladonia bellidiflora*, or toy soldiers. The common name British soldiers is generally used, somewhat indiscriminately, for many species of *Cladonia* with red apothecia, but is best applied to *C. cristatella* found in eastern North America. As most common names for lichens are of very recent origin, it would be helpful if everyone used those suggested in "Lichens of North America" by Brodo, Sharnoff and Sharnoff.

Rock is frequently more or less covered with lichens, mixed in with competitive mosses. What may appear to be the weathered surface of rock may actually be gray crustose lichen, as in Figure 6, page 7. More obvious in this image is orange *Lecidia lapicida*, one of several species that vary in color and may be quite red in the presence of iron. Rock chemistry and texture strongly affect a lichen community's makeup: It is different for silica-rich and silica-poor rock, and very different for limestone. Some of these communities are found on neighborhood sidewalks, where what at first glance appears to be old chewing gum is very often the gray lichen *Aspicilia contorta*. It is instructive to examine a sidewalk close up, or better yet, with a hand lens. Most crustose lichens found on rock grow exceedingly slowly. (Some yellow *Rhizocarpons* in the arctic expand by less than one tenth of a millimeter a year. Larger individuals can be several thousand years old and are used to date events, such as when the glaciers retreated.)

Glossary of Terms

APOTHECIUM (pl. apothecia)—a common form of fruiting body involved in the sexual reproduction of fungal spores

CORTEX—the dense outermost layer of the lichen thallus

CRUSTOSE—a growth form for which the lichen, which lacks a lower cortex, is appressed to its substrate like a stamp on an envelope

CRYPTOGAMIC CRUST—the surficial layer of soil in arid areas, which consists of lichens, mosses, algae, fungi and cyanobacteria

CYANOBACTERIA—a phylum of bacteria that contains a form of chlorophyll to conduct photosynthesis (formerly called blue-green algae)

CYANOLICHEN—a lichen in which the photobiont is a cyanobacteria (some cyanolichens also include a green algae as photobiont)

DUST LICHEN—growth form, also known as "leprous," for which the thallus consists entirely of tiny granules

FOLIOSE—a growth form for which the thallus consists of leaf-like lobes with distinct upper and lower surface

FRUTICOSE—a growth form in which the portions of the thallus are radially symmetrical in cross section, appearing bushy or pendant

HYPHA (pl. hyphae)—microscopic filaments that are the building blocks of fungi

LICHEN COMPOUNDS—over 600 secondary chemical compounds produced by lichen mycobionts

MEDULLA (pl. medullae)—the cottony, loosely packed internal layer of the lichen thallus

MYCOBIONT—the fungal partner of the lichen association, usually of the phylum *Ascomycota*

PHOTOBIONT—the photosynthetic partner of the lichen association; either a green alga or a cyanobacteria, or both, may occur in a lichen

PODETIUM (pl. podetia)—stalks of the secondary thallus in *Cladonia*

RHIZINE—threads of hyphae with which some lichens are attached to their substrate

SOREDIUM (pl. soredia)—tiny granules (consisting of photobiont cells engulfed in mycobiont hyphae) that are dispersed for vegetative reproduction

SQUAMULE—small, scale-like structures of thallus

SUBSTRATE—the surface or medium on which an organism lives or grows

THALLUS (pl. thalli)—the vegetative body of the lichen

It may come as a surprise that some lichens have adapted for life in fresh or salt water. Intermittently inundated margins of rivers and creeks—and the adjacent "splash zone," which is frequently moistened by spray—are home to many lichens. There are even a few truly aquatic species that prefer to be completely submerged. The complex community of organisms on intertidal rock includes many species of lichens. Several species of the lichen genus *Pyrenocollema* actually grow within the outer shells of barnacles and limpets and can be recognized by their black fruiting bodies, which dot the shell surface. Many lichens inhabit the "salt spray zone," just above the intertidal zone. In and above the upper intertidal zone, *Varrucaria maura* appears as a black band that can be seen from a great distance, as in Figure 4, page 6. Rocks frequented by birds may be recognized by bright orange *Xanthoria candelaria* and other ornithocoprophilic* lichens.

After hearing about the nature and diversity of lichens, people often want to know if lichens are of any importance in the scheme of things. The prominent position of lichens in polar and alpine ecosystems has been mentioned. In arid regions, lichens form an integral part of the "cryptogamic crusts" that protect and maintain the soil. Our temperate rain forests depend to some degree on the nitrogen-fixing ability of cyanolichens. Lichens are the primary source of food for flying squirrels and caribou and also are consumed by deer and elk. Studies indicate that the success of some species of birds in fledging their young is significantly diminished when lichens used for their nest decoration are not available. Perhaps the bushtits who constructed the nest seen in the photograph on page 1 are accomplished in aesthetics as well as the art of camouflage. In many cultures, lichen compounds—such as yellow vulpinic acid mentioned above—have been used as dyes. *Usnea* is used in medicine, particularly in China, and is an important ingredient in perfumes. There are many ways in which lichens fit into the scheme of things, but for me, most of all, lichens add interest and beauty to the world. ~

Richard Droker's interests include astronomy, geology, botany and ornithology. More of his photographs may be seen at: http://www.flickr.com/photos/29750062@No6/

**People who are fond of interesting words may find this one amusing: It derives from ornith—bird; copro—feces; philic—affinity. Ornithocoprophilic lichens appear on rocks where birds drop feces.*

Selected references:

Brodo, I. M., S. D. Sharnoff, and S. Sharnoff. "Lichens of North America." Yale University Press, New Haven & London: Yale University Press, 2001. A magnificent book with superb text and stunning photographs. Beautiful as well as extremely useful. 795 pages.

Goward, T., B. McCune, and D. Meidinger. 1994. "The Lichens of British Columbia, Illustrated Keys, Part 1—Foliose and Squamulose Species." Victoria, British Columbia: Crown Publications Inc., British Columbia Ministry of Forests, 1994. Anyone seriously interested in Northwest lichens should have this book and its counterpart, Part 2, both illustrated with Trevor Goward's drawings. 181 pages.

Goward, T. B., The Lichens of British Columbia, Illustrated Keys, Part 2—Fruticose Species." Victoria, British Columbia: Crown Publications Inc., British Columbia Ministry of Forests. 319 pages.

Hutten, M., Hutten, K., and Woodward, A. "101 Common Mosses, Liverworts & Lichens of the Olympic Peninsula." National Park Service, 2001. Now difficult to obtain, this small book, illustrated with color photographs, is a wonderful introduction to many common species. 109 pages.

McCune, B., and L. Geiser. 2009. "Macrolichens of the Pacific Northwest" 2nd ed., Corvallis, Oregon: Oregon State University Press. Illustrated with color photographs. We in the Northwest are lucky to have this superb resource, which is indispensable for identification of our lichens. 448 pages.

Northwest Lichenologists at www.nwlichens.org
This Web site includes information on meetings and field trips, keys, literature, links to other websites, etc.

Pojar, J. and MacKinnon, A. "Plants of the Pacific Northwest Coast." Lone Pine Publishing, Vancouver, British Columbia: Lone Pine Press, 2004. Familiar to Northwest botanizers, with an excellent section on lichens by Trevor Goward. This book covers some of our common species. 528 pages.

Vitt, D. H., J. E. Marsh, and R. B. Bovey. "Mosses, Lichens and Ferns in of Northwest North America." Edmonton, Alberta: Lone Pine Press, 2007. In this book, the Pacific Northwest region extends to the border of Manitoba. Over 150 species of lichens, illustrated with color photographs. Not much changed from the 1988 edition. 296 pages.

This article is one in a series on places of botanical interest worth visiting while on the road or on the go.

Yakima Area Arboretum

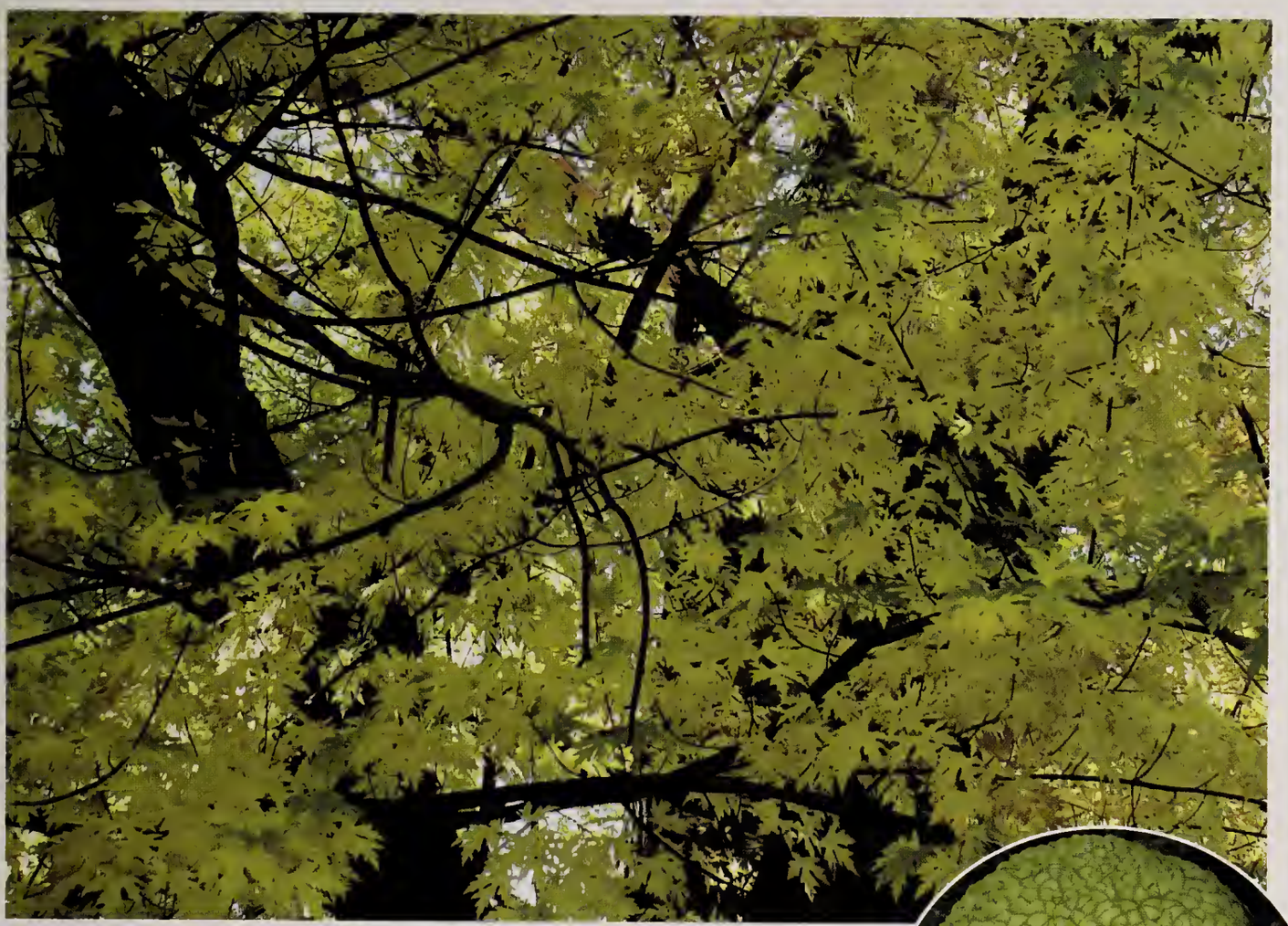
By Janine Anderson

There are myriad reasons residents of Cascadia might head east into the vast landscape of the Columbia River Basin. For plant lovers, included among these should be a fall visit to the Yakima Area Arboretum.

Located less than 150 miles southeast of Seattle, the Yakima Area Arboretum is a living museum of woody plants as well as a botanical garden. Sited at the junction of I-84 and Highway 24 just east of downtown Yakima, the Arboretum's 46 acres, with over 1000 trees and other native and non-native plant species, offer a haven of tranquility beside the busy interstate.

Open 365 days a year, from dawn until dusk, the Arboretum features an expansive lawn dotted with clusters of deciduous trees that color richly during the sunny days and crisp nights of the Central Washington autumn. The fruits, nuts and seed pods borne on many of these trees—among them filberts, almonds,

ABOVE: : Jewett Pond, with the Joyful Garden's flowering cherries to the left and the ash collection (*Fraxinus* species) to the right. **RIGHT BELOW:** The Centennial Pagoda in the Joyful Garden. (Photographs by Janine Anderson)



ABOVE: Buttery-yellow foliage of *Acer saccharinum*, the silver maple. **RIGHT:** The fruit of *Maclura pomifera*, the Osage orange. (Photographs by Merri Buck)

English and black walnuts, Japanese heart nuts, and pecans—are appreciated by critters and collectors alike. Other features include a visitor center, a rock garden, a rose garden, a butterfly garden, an impressive collection of conifers, a Japanese garden, a large pond, a wetland interpretive trail and a compost demonstration site.

History of the Arboretum

Originally riparian wetlands, the current site of the Yakima Area Arboretum was home to chicken and vegetable farms before acquisition by the Yakima Metro District. The property was designated as an arboretum in 1967, and the first tree—a cedar of Lebanon—was planted on Arbor Day of that year. Although that first tree died, the Arboretum still survives and thrives 42 years later.

Visitor Center and Jewett Pond

Opened in 1995, the Jewett Interpretive Center contains interpretive exhibits, a horticultural library, an herbarium, a museum store, meeting rooms, administrative offices and even a carillon bell tower. Nestled in the landscape, the building's entry is softened by a bermed rock garden with ornamental grasses, sedums, herbaceous perennials and a basalt column fountain surrounded by native plants. Generous overhangs shade the building in summer, and expansive windows provide views of Jewett Pond and the distant tapestry of trees.

Deciduous Hardwoods

Framed by clear blue skies and purple hills, the deciduous hardwood trees in the Arboretum include species that fare well in the dry, continental climate of Eastern Washington. Deciduous species of special merit in the fall include ash, maple, birch, Euonymus, beech, honey locust, mountain ash, linden, hawthorn, *Viburnum*, sumac, ginkgo, hornbeam, dogwood, sweetgum and the nut trees mentioned above.

Nuts are favored by squirrels and collectors of all ages. One of the more eye-catching fruits is the Osage orange (*Maclura pomifera*), so-called because the ripened fruit has a fragrance faintly similar to an orange. When found on the ground, the grapefruit-sized, brain-like fruit of this dioecious tree native to the Great Plains mystifies many visitors.

The "Centennial Oaks," planted on Arbor Day in 1989 to commemorate Washington State's Centennial, should achieve their full stature by the State's bicentennial celebration in 2089.

Conifers

Among the spruces showcased in the Yakima Area Arboretum are some that often fare poorly on the wetter western side of the Cascades. Included in the collection are Colorado (*Picea pungens*), tigertail (*P. polita*), black (*P. mariana*), white (*P. glauca*) and Norway (*P. abies*) spruces. Among the pines on display are Japanese red (*Pinus densiflora*), black (*P. thunbergii*) and white (*P. parviflora*), as well as ponderosa (*P. ponderosa*), Scotch (*P. sylvestris*) and limber (*P. flexilis*).

Other conifers include a small grove of giant sequoia (*Sequoiadendron giganteum*), a variety of true fir (*Abies*) and false cypress (*Chamaecyparis*) specimens, and a windbreak screen of incense cedar (*Calocedrus decurrens*). One unique specimen is a weeping Douglas fir called *Pseudotsuga menziesii* 'Weeping'. Reportedly, this specimen was created when a branch of one Douglas fir was grafted onto the root of another one.

The fall color is enhanced by deciduous conifers, including larch (*Larix*), bald cypress (*Taxodium distichum*) and dawn redwood (*Metasequoia glyptostroboides*).

Japanese Garden

A one-acre Japanese garden, the "Joyful Garden," was designed by landscape architect Jack Takayama—who had worked as a farm hand at the site in the 1940s, when the land

was used as a vegetable farm. A hand-carved stone lantern and 10 Yoshino cherries were gifts from Yakima's Japanese sister-city, Itayanagi. The Hata Gateway, named after Yoshio Hata—one of the garden's earliest boosters—supports Japanese wisteria (*Wisteria floribunda*). The Centennial Pagoda was donated by Southwest Rotary to commemorate 100 years of Rotary International. At the highest point in the garden, a weeping Alaska yellow cedar (*Xanthocyparis nootkatensis* 'Pendula') is silhouetted against the horizon. The garden is currently being fine-tuned, with the addition of lichen-covered basalt boulders, bridges and plantings. Trees are being pruned to reflect the traditional Japanese garden style. The Joyful Garden is aptly named, as it is a popular site for weddings in warmer weather.

Other Attributes

The Arboretum and adjacent riparian habitat of the Yakima River offer excellent opportunities for observing the many birds that frequent the area. In fall, cedar waxwings and varied thrush can be seen stripping ripened berries from fruiting trees. Adjacent to the Arboretum is the Yakima Greenway Path, a 10-mile, paved walking and biking path along the cottonwood-lined Yakima River.

A self-guided tour brochure can be obtained in the Tree House Gift Shop (or outside the visitor center door if the center is closed). Each season brings new wonders, from flowering cherries in April to golden foliage in fall. Group tours are offered free of charge but must be arranged in advance.

Similar to the Washington Park Arboretum, the Yakima Area Arboretum works with national institutions to increase the numbers of exotic specimens in the Arboretum. The climate of the Yakima area is ideal for testing hardiness and water demands, contributing to more ecological landscape design. Local extension agents and master gardeners use the Arboretum for training in the diagnosis of plant problems.

Arboretum staff, as well as plant scientists from Washington State University and the Washington State Department of Agriculture, all conduct research at the Arboretum. Projects include testing Asian birch cultivars to identify a tree for the urban forest that is resistant to the bronze birch borer; testing the adaptability and hardiness of experimental species to increase botanical diversity in the urban environment; testing buffalo grass, a water-conserving turf grass, in an effort to reduce the use of water-demanding turf grasses in Central Washington; and testing integrated pest management techniques for control of fruit tree pests, including reducing pest populations in ornamental crabapples.

Conclusion

Development of the Yakima Area Arboretum has been a labor of love with community-wide involvement. Private donations have ranged from hundreds of thousands of dollars for large-scale projects, such as the Jewett Interpretive Center, to single specimen trees provided by donor sponsors. Additional support has come from grants, public and private nonprofits, and groups as diverse as Southwest Rotary and Yakima Nations Legends Casino.

Volunteers from local garden clubs—including the Yakima Valley Iris Society (Iris Bed) and the Lower Naches Garden Club (Rose Garden)—maintain many of the featured display gardens. A full-time groundskeeper and crew of volunteers do most of the maintenance for the grounds, and the City of Yakima mows the lawn during the summer growing season.

An annual fundraiser, "Autumn Bounty," is held in September. If your visit coincides with this year's gala event on September 19, you can enjoy an evening of fine wines from the Yakima Valley terroir, wonderful food, a jazz quartet, and live and silent auctions on the grounds of the Arboretum. The event has a wonderful party atmosphere amid the color of autumn.

Whether the Yakima Area Arboretum is your destination or a stop along the way, a few hours there will be time well spent—especially in the fall, when the sky is blue, the sun is bright, the nights are cool, and the trees are ablaze with color!

To visit:
Yakima Area Arboretum
1401 Arboretum Drive
Yakima, Washington 98901
509-248-7337 • info@ahtrees.org
http://www.ahtrees.org/

Janine Anderson, CPH, is a landscape designer (www.anderson-design.net), longtime Arboretum guide and member of the "Bulletin" Editorial Board. Colleen Adams-Schuppe, co-executive director of the Yakima Area Arboretum, provided help with this article.

TOP: Red maples (*Acer rubrum* 'October Glory') blaze in an autumn tapestry. **BOTTOM:** In fall, the foliage of sweetgum (*Liquidambar styraciflua*) turns golden. (Photographs by Merri Buck)

Architect as Storyteller

By Betsy Anderson

Photographs courtesy of Jones & Jones Architects, Landscape Architects and Planners

Johnpaul Jones creates the space of memory and restores our relationship to nature, to the past, and to each other.

There was wildness here. Even the parking lot of the Mercer Slough Environmental Education Center asserts that this is not your average suburban destination. The entrance drive dips low, scooping arriving visitors from a matrix of on-ramps, traffic lights and half-finished building projects. As they turn their backs to the highway and park their cars facing west toward an endless horizon of trees, they feel suddenly as if they've traveled back in time—that somehow everything has slowed, that they remember something they have forgotten. Bird song rises jubilantly above the drone of I-405 . . . There is still wildness here.

"It's important to take the time to introduce people to the site, to provide them with the information they need to truly understand and appreciate the place," explains architect Johnpaul Jones, speaking from his sunny office in Seattle's Pioneer Square. "We study exactly where people will be coming from when they enter a space. We then have the opportunity to calm them down, to slow them down, and to share the landscape with them." In the case of the Mercer Slough

TOP: Johnpaul Jones. **BOTTOM:** Inside the Mercer Slough Environmental Educational Center.

Environmental Educational Center, this requires stripping away layers of concrete and time. Following I-405 as it slices down the backside of Lake Washington, it is difficult to imagine that this was once an area of rolling fields and blueberry farms or, before that, the gritty, energetic hub of a lumber mill or, still earlier, the unknown, even threatening wilderness to Seattle's east. Estranged from the natural and cultural heritage of the land, we arrive at the Slough in need of slowing down.

Jones & Jones, Architects, Landscape Architects and Planners—the designers of the site—have anticipated this need. Even on a rainy day, a viewing platform draws you up from the parking lot and invites you to pause and take in the still pond, fringed with trees and shrubs. The gaze is directed low and near, on the reflection of tea-colored water and the white birches rising against the muted tones of the late winter landscape. Bare stems of blueberry bushes, long-escaped from cultivation, cast such a warm, red glow that you scarcely notice the Bellevue high-rises looming in the distance.

The landscape has been allowed to speak, to share the strata of its history. For four decades, Jones & Jones has been giving voice to the land and its inhabitants, fundamentally altering, in the process, the way we perceive our built spaces and their potent capacity to connect us to our past, our present communities, and the world around us.

Origins

At the heart of the firm's design philosophy is a lesson Johnpaul Jones learned from his grandmother. Pulling two typewritten pages from a folder, he describes his uniquely holistic approach to design—design that centers on four worlds. The typed pages map these four worlds—natural, animal, spirit and human—and distill their key elements. "My Indian grandmother gave me this to help me solve problems," he recalls. "When I was a young man I didn't pay a lot of attention to it, but as I went through architectural school I discovered that these tools were very helpful when undertaking a project. I still consider these four things every time I work on a design."

Jones, a member of the Choctaw Nation of Oklahoma, moved to Seattle in the late 1960s, where he set up a tiny practice working for the Native American community. He had received his architectural training at the University of Oregon, at a time when the landscape of architecture was shifting: "In the '60s, they were saying that architecture has to change; it could no longer be building the tower, the castle on the hill. We were talking about the environment and how it is integral to the building, that the surroundings can't be ignored."

This point of view had not yet percolated through Seattle's architectural community, and Jones's first encounter with Grant and Ilze Jones, two architects who shared his ideas, was particularly resonant: "We liked each other so much that we teamed up," he remembers. Though they share a name, the three senior partners of Jones & Jones are related only through their values, namely a profound respect for the land, a humanistic approach to design, and a commitment to integrating architecture and landscape architecture. "Grant brings a unique perspective in large-scale environmental planning," Jones continues, "and Ilze loves the urban environment and all the things that go with it. I'm just an architect who loves landscape architecture . . . So it was a wonderful thing for us all to come together."

The energy and creative flush of that initial collaboration have not diminished, though the firm today encompasses an additional three principals—Mario Campos, Chris Overdorf and Dave Matthews—as well as nine senior associates and 20 associates. Taken together, their portfolio of over 650 completed projects on six continents has reshaped the profession and taught us to see museums as elders, rivers as organisms, highways as great garden paths, and zoos as habitats. (In the 1970s, Jones &

Jones transformed zoological design when they pioneered the landscape immersion approach at the Woodland Park Zoo.)

A lively mix of landscape and architecture still serves as the catalyst: Architects, landscape architects and planners all rub elbows in the humming network of their light-filled office space. Stretching across the third floor of a century-old building (and meandering into the adjacent structure as well, Jones points out as we walk past an exposed section of the original brick fire partition), the offices of Jones & Jones fit as seamlessly into their historic urban setting as the Environmental Education Center extends from the trees edging Mercer Slough.

The Living Museum

These spaces feel good. They welcome you as an individual but leave you with a powerful sensation that you are participating in something greater. This is certainly true of the National Museum of the American Indian, its warm stone curving and rising like a canyon wall from the Mall in Washington, DC. Johnpaul Jones led the design for the 12-year project, which was built on the last available land on the National Mall and opened in 2004.

The design team for the museum was charged with creating a living monument to the cultural wealth and diversity of Native American communities in this country, their influence on the land and our history, and their contribution to our society and national identity. "Every Indian community is interested in having some of their culture represented," Jones explained in a 2004 interview with "The Seattle Times." This was no small feat; there are 562 federally recognized tribes and likely half as many more distinct groups that receive no formal recognition whatsoever. When the museum first opened to the public, newspaper articles repeated Jones's account of meeting an Aleut elder in northern Alaska: The woman approached, shook her finger at him and declared, "I want to see some of us in that building."

At first glance, it was difficult to imagine how the future site of the museum might give rise to a space where the Aleut woman could feel at home. There are few landscapes in America that pay so complete a tribute to European architectural heritage as the Mall, with its chiseled avenues and perfectly aligned procession of street trees. Though built in the middle of one of the densest urban centers in the country, the museum had to be a place that the Native American community could recognize—both spiritually and physically.

When asked how he approached a project of this scale and importance, Jones returns to the four worlds of his grandmother: "We had to speak to the diversity of Indian communities across the country, and to do this we couldn't build a longhouse or a teepee or a Southwest hogan. We had to identify what all these groups have in common, and what they all share is a respect for the four worlds. They all pay attention to the natural world, the animal world, the spirit world and the human world, and so our building took all of these into account."

To do this, Jones and his team had to listen. "We had advisors," he continues, "15 of them, made up of elders and artists from around the country. None of them were planners or designers or architects, but they were all part of the knowledge that had been passed down in these communities for generations. One of them was a Blackfoot woman—a living treasure of the State of Montana—who knew plants. She knew all the plants that could help human beings, and we wanted her to be part of the design process."

Listening to the land was equally important and has been the cornerstone of every Jones & Jones project for four decades. "We try to bring the memory of the land forward, to allow the land to have a voice," Jones emphasizes. Every project begins with researching the natural history of the landscape, examining old maps, drawings and photographs: "In most places the land has been changed pretty radically, but if you look

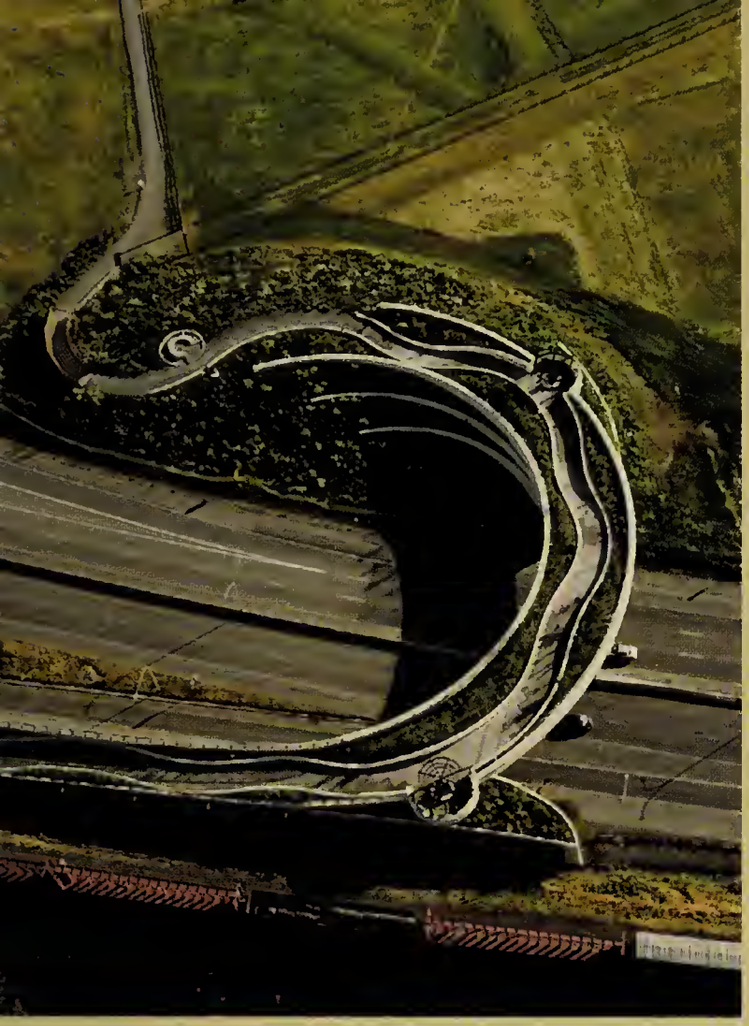
back 100 years or more you start to get a very clear idea of what it used to be like."

Early inspiration for the National Museum of the American Indian came from an old map that Jones saw displayed in a pharmacy window during one of his first visits to the site. The map indicated that there was originally an extensive wetland in the area surrounding the future museum, and that a little stream called Tiber Creek once meandered through the landscape. Further research revealed that the government had backfilled the area, raising the grade by 20 feet and smothering the source of water.

What was there before drove the design. "We ended up creating wetlands in that area—wild wetlands, right there on the Mall," Jones beams. "Birds, butterflies and dragonflies gather there, and now we have a seasonal area that changes, and a cool place for people to sit during those hot summers."

Jones's designs are alive, precisely because they create spaces that allow the four worlds to come together. Outside the NMAI, the natural heritage of the land is brought forward with the restoration of the wetland and made available to the indigenous wildlife, in this case Monarch butterflies that pause here en route from New England to their winter home in Mexico. "It's incredible!" Jones exclaims. "Even in this huge urban area there are great flocks of migrating Monarchs. This was one indicator to us that it would be nice to create some natural place where they could stop and rest."

TOP: Interpretive signage on the Vancouver Land Bridge informs visitors of the landscape's history. **BOTTOM:** Johnpaul Jones at a workshop at the Southern Ute Museum that included local children in the design process.



Into the mix comes the human world, attracted to an inviting, dynamic environment and encouraged to gather in all corners of the museum, inside and out, by the creation of quiet, out-of-the-way places to meet and share stories. And the spirit world is present in equal measure: Interior and exterior spaces host ceremonies that keep the spiritual connections of Native American communities alive and well. Jones's Native American cultural centers—for he has designed many, all over the country—have been likened to living elders, and this is exactly the way he sees them, too: "They're the grandmothers and the grandfathers. This is where you come to learn about your culture."

The entire campus of the NMAI was conceived to communicate these spiritual and cultural traditions with as wide an audience as possible. Pedestrians are drawn into the central plaza to discover the source of the singing and drumming that vibrates along the Mall, and the structure of the museum itself serves as a giant amphitheatre: The three-story covered entrance is strategically positioned to project the sound of tribal ceremonies all the way to the chambers of the Capitol. "Jay Inslee once asked me about that," Jones chuckles. "He said they can hear singing and drumming when they're in session at the House of Representatives. He asked if we'd done that on purpose. I said no, but actually we did: We're letting Congress know that the Indian people are here and are always going to be here."

In this way the museum not only completes the circle of the four worlds but connects the Native American heritage to our national identity, past and present, at long last allowing it its rightful place in American cultural history. This idea is expressed visually in the native plants that scramble around the regimented

LEFT: The Vancouver Land Bridge flows over SR-14 in southern Washington State. **ABOVE RIGHT:** The National Museum of the American Indian features a wetland landscape that reflects the organic building forms while providing habitat for animal communities. **BELOW RIGHT:** The principals at Jones & Jones. Clockwise from top left: Johnpaul Jones, Grant Jones, Ilze Jones, Chris Overdorf, Dave Matthews and Mario Campos.

rows of trees on the Mall outside the museum. "The Mall in this area preserves its European integrity but also feels a little bit wild, which really speaks to where the Indian people come from . . . and they relate to it better."

Handshake

Jones's projects take on a life of their own, whether in the springtime song of frogs that have returned to a restored pond, in the creative and spiritual discoveries that occur when groups of people are brought together, or in the form of plants that grow and soften what humans have left behind. The design of the National Museum of the American Indian announces that it is a creation as organic and soulful as it is architectural and physical—one that will shift and evolve with the four worlds that converge in its borders. Jones compares this dynamism to a moving hand; indeed this is the analogy he uses to describe his design process: "You can't think of it all in a straight line. You can't say, 'I'm done with research, I'm done with analysis, I'm done with programming, and now I can start designing.' It's like a hand, where you need all the fingers. It all needs to happen at once or you can't do anything with it. But like a hand, once you get it working you can do anything!"

The powerfully physical image of the hand is echoed in the Land Bridge, a pedestrian bridge in Vancouver, Washington that reaches like an arm over SR-14, grasping the upland side of the highway and pulling it toward the Columbia River. "I call it grabbing hold of the land and dragging it up and over the freeway," Jones explains, describing his design of the great curving overpass.

Though massive, the structure leaps—as the tendril of a plant—over the surging traffic below. Washington SR-14 is also called the Lewis and Clark Highway. The 180-mile stretch of road weaves west along the north bank of the Columbia, through the ruddy chasms of the Columbia River Gorge and past the confluence of one flashing tributary after another. The road culminates with a sad irony in Vancouver, in a concrete canyon of tangled ramps and flyovers.

Or at least this was the way it felt here until the summer of 2008, when the Land Bridge was dedicated. Jones's "arm" is the largest piece of art commissioned for the Confluence Project, a collaborative endeavor conceived by luminary Maya Lin to connect the people and landscape of the Northwest to our natural and cultural heritage. One of seven installations in key locations in the Columbia River Basin, the Vancouver Land Bridge embodies the Project's mission to discover, strengthen and celebrate our ties to nature, to the landscape, and to the people who have inhabited it.

The site of the Land Bridge is an area of great historical and cultural significance: The northern bank of the Columbia's lower reaches marked the end of the storied Klickitat Trail, which the inland Klickitat tribes would follow to trade with the coastal Chinook, and later with the Hudson's Bay Company at Fort Vancouver. The vital and natural movement—from the interior landscape of mountains, prairie and desert to the river and ocean—was now blocked by a chain of highways. Jones faced the challenge of restoring this long-severed connection: "We were trying to reconnect what I call the circle of life, and this design is based on that circle. One side has views over the water, the other over the land. Circular overlooks are inscribed with words in different languages—including English and various tribal languages—that wrap around the land side of the circle, and then it's the same for water on the other side. We built the language in." Jones and his team created a home for plants and animals as well as for words: Native food crops have replaced a mowed grass bank on the side of the highway, and the bridge itself incorporates places "that allow for the animal world to come, rest and use," says Jones.

Seattle's Architect

The Land Bridge brought Vancouver back

to the Columbia River, and Jones would like to see the same thing happen in Seattle. He looks out his office window at the ribbons of blue peeking between the decks of the Alaskan Way Viaduct. "Someday we'll get rid of that," he gestures, "and we'll be able to restore Seattle's historic connection to the Sound. A city's bond with its waterfront is important, particularly here—we need spaces for people to relax and enjoy our natural beauty and heritage. We need to get Seattle reconnected with our environment."

Jones was drawn to Seattle for its integration of urban life with a stunning natural setting: "This is a great city with lots of opportunity to share and work with different cultures, but it's also easy to get out into the wilderness." His days can be spent in the creative whirr of a world-renowned architectural firm, and he can return at night to the sounds of waves lapping the shore near his Bainbridge Island home.

"It is a wonderful thing to have that sound...It's a wild, natural thing." Listening to Johnpaul Jones is to be transported to a hushed, ancient union with nature; the quiet cadence of his voice is perhaps more soothing than the sound of the water itself. One understands at once that projects like the Mercer Slough Environmental Education Center are born of those who revere the Pacific Northwest landscape, who feel it beating in them like waves. ~

Betsy Anderson is a writer, garden historian and landscape designer for Exteriorscapes, a sustainably minded landscape design-build firm located in North Seattle. She would like to thank everyone at Jones & Jones for their assistance with this piece, including Tom Carlson, Barbara Witt and, most especially, Johnpaul Jones.

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REMEMBER LAST CHRISTMAS?

Whether it was this past winter or a previous one, we all have tales to tell of indignities suffered by our beloved plants. At a planning meeting for this issue of the "Bulletin," it was suggested that we do a story on how to prepare a garden for winter. Steve Lorton volunteered to write the piece and then drafted me to co-write it with him as a short set of personal recommendations.

I heartily agreed to this collaboration. Both of us hope that our thoughts help you in the future.

—Walt Bubelis

Preparing the Garden for Winter

BY STEVE LORTON

Learning to garden in the Midwest might have given me an advantage over the Pacific Northwest-born gardener. For openers, I'm really not afraid of ice, snow and cold. I rather love it.

The few times I've run into trouble in my garden, due to a tough winter, was because I broke one of my own cardinal rules: Don't waste your time with marginally hardy plants. There are too many good things out there for our climate that are risk-free. In Seattle, I garden in a very sheltered USDA Zone 8. At my garden in the Cascade Mountains in the upper Skagit Valley, I figure I'm at the low edge of USDA Zone 7. So it came as no surprise when I lost a ceanothus last winter up in the Cascades and my hardy fuchsias got knocked down to the ground in Seattle; although they sprang back robustly by summer. **Rule # 1—Grow reliably hardy plants.**

• Clean up your garden about the time the last autumn leaf drops. The garden looks better, and you can see what you've got out there. Evergreens, sculptures and patterns all pop. If a deep freeze or snow comes, you know what is where, and you can monitor it. You also have a handsome frame for snow when it falls. **Rule # 2—Go into winter with a tidy garden.**

• Cut back the perennials that you don't intend to leave standing for winter interest. I like to leave an even, well-groomed stubble of dead stems that is 4 to 6 inches high. The stubble catches debris that falls, makes a kind

of basket to catch snow, lets the dog know where not to pounce, and serves to guard the tender new shoots when they emerge in spring. **Rule # 3—Carefully cut back perennials.**

• After I've cleaned up the garden for winter, I spread out a four-inch layer of good commercial mulch. This fortifies the soil, adds a layer of protection to plant roots, and acts a bit like a blanket tucked over cold feet. Somehow, it just keeps the whole body of the plant happier. **Rule # 4—Blanket the garden in mulch for winter.**

• If we have a heavy snow, let it fall and feel confident in its ability to insulate. But I do go out with my push broom, even in the middle of the night, to shake the heaviest snows off the trees and shrubs. Nothing ruins the glistening beauty of a fresh, thick snowfall faster than a downed tree or a cracked limb. Sometimes I get under the tree and shake the trunk as hard as I can. I've lost very little to heavy snow. **Rule # 5—Shake heavy snow off trees and shrubs.**

• When temperatures really plunge, experience has taught me that thirsty broadleaved evergreens and conifers burn the worst. Going into winter, I hold off on water for deciduous plants and perennials, but I water well evergreens, especially those in containers. **Rule # 6—Send evergreens into winter with a stiff drink.**

• If I see winter damage in spring, I wait until July to take it off. Seemingly dead branches have often surprised me with a burst of new growth. And I remember, years ago, when the San Francisco Bay Area was hit with a bit of a cold snap and snow. Many of the big, old eucalyptus defoliated. Those poor Californians got hysterical and cut huge numbers of the trees down, only to notice that the ones they hadn't leveled leafed out from the branch tips in late spring. **Rule # 7—Give nature time to recover.**

And that's about it. Long ago I spoke with a gardener at Wisley, after a terrible windstorm that had brought down a number of centuries-old trees. I expressed sadness. "Not a problem," was the response with inimitable British pluck. "It's nature at work and gives us the exciting new challenge of filling the voids by planting new things."

Here's to winter, in all her fierce glory!

Winterizing

By Walt Bubelis

Most of us lost some treasured plants this last winter; here are some techniques that have worked for me to reduce losses over the years:

Plan ahead! I know it's hard, but if you can watch the weather forecasts—short and long-range alike—you can help save some precious plants from damage or worse. Although most years will see first frosts arriving sometime after Halloween, be aware of early predictions of clear, cloudless nights. That's when, without a cloud cover, heat is lost to the sky and temperatures can plummet.

If such is the case, have at hand protective covering such as Reemay® or cut a number

of boughs off a Douglas fir or pine that you can drape over plants. I've used protective fleece on tomatoes numerous times, just to get past a first frost so that I can harvest fruits—for maybe the first and only time!

I like to use notable calendar events to remind myself of when to do certain things in the garden. For instance, after Labor Day I start weaning plants off of water. I want the plants to be neither stressed, nor succulent, going into the fall. I cut back on any fertilizing from July onward, avoiding high nitrogen but maintaining phosphorus and potassium. (Woody plants don't get much

ABOVE: Protect tender plants with plastic (left) and burlap "tents" (right).
BELOW: Winter damage on *Hebe buxifolia* (left) and a daphne (right). (Photographs by Walt Bubelis)

fertilizer, anyway, once they are established in my garden.) With respect to containerized plants, I do continue feeding annuals well into fall but wean the perennials off fertilizers early, since most stop growing after their initial flush.

I have a small greenhouse in which I keep my most tender containerized specimens, but for all the rest, I place them under some protective covering such as an eave or non-heated sun porch. Wet, cold roots "do in" many plants. Just keep them slightly moist, much as you would if you were to dig up dahlias and store them in dampened mulch. Plants under eaves still need watering, though.

For large containers that can't be shifted out of harm's way, consider wrapping pots with bubble wrap. If it looks just too odd, disguise the wrap with an overlay of some brushy material such as the reeds of a grass.

What? You still haven't planted everything you've bought? If they're not the hardiest of plants, bunch them close together. Add a layer of shredded leaves over the containers that will stay outside. I run fallen dry leaves through a shredder (a mower can do a similar job). The leaves are easy to work with when still dry.

If these don't seem to work, how long should you wait for signs of life? I use the Fourth of July as the last date for a plant to re-sprout. Before then, use your fingernail to scratch the bark and hope to see some green or light, creamy color that indicates the tissue still has moisture within. Once a plant does re-awaken to warmth and moisture, don't feed it for a while. If all else fails, search the nurseries and catalogs for replacements! It does open the door to try new things, too!

And to come full circle, in the words of Steve: "Let it snow, let it snow, let it snow!" ~

Steve Lorton and **Walt Bubelis** are members of the "Bulletin" Editorial Board.

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Janine Anderson is a long-time Arboretum guide and member of the *Bulletin's* Editorial Board. Her article, "Ten Trees of Belize," is scheduled for the Winter 2010 issue of the *Bulletin*.

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www.anderson-design.net

THE ANNUAL REVIEW OF
New Books from Pacific Northwest Writers

BY BRIAN R. THOMPSON

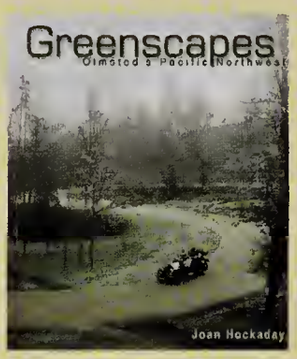
■ Landscapes

John Charles Olmsted made numerous visits to the Pacific Northwest from 1903-1911. This nephew of Frederick Law Olmsted was himself a highly regarded landscape architect and noted for his attention to fine detail. The chronicle of his many projects in the region is written with this same, careful attention to detail by Joan Hockaday in "Greenscapes: Olmsted's Pacific Northwest."

Olmsted was a prolific writer, both in his professional records and in his correspondence (5000 private letters survive), especially his daily letters to his wife Sophia and their daughters at home in Brookline, Massachusetts. Hockaday uses this wealth of sources to create a book that works on several levels: as a history of an important time in the development of our region, as a biography of a skilled landscape architect working in the shadow of his more famous uncle, and as a glimpse of a by-gone era through garden design.

While his work took him from Vancouver Island to the University of Idaho and south to Corvallis, much of the book's focus is on Seattle, where he spent some 300 days during those nine years. Hockaday convincingly argues that Olmsted is responsible for much of what now defines the city, especially the park system, Lake Washington Boulevard, the University of Washington campus (including Rainier Vista) and many private residences. (See the author's "The Architect, the Landscape Architect and the Arboretum" in the Summer 2009 "Bulletin" for an account of Olmsted's role in the development of the Arboretum.)

This year Seattle is celebrating the centennial of the Alaska Yukon Pacific Exposition. "Greenscapes" would make an excellent keepsake for this celebration as the chapter on Olmsted's collaboration with architect John Galen Howard is one of the most engaging. Like the rest of the book, this story is lavishly illustrated with maps, drawings, historical post cards and photographs—often contrasted with current day views—that make it fascinating to first flip through, before settling in for a good read.



■ Trees

Portland nurseryman Sean Hogan addresses a neglected part of the garden palette in "Trees for All Seasons: Broadleaved Evergreens for Temperate Climates." And he does it with great enthusiasm, being quite candid that one of his goals is increased planting of these excellent but underused plants.

First, he defines his scope. Conifers, or monocots such as palms, are not included. He's also strict about evergreens: Subjects must "...keep their leaves year-round, or nearly so, but also remain attractive while doing so." Icons with each entry give size and shape and emphasize these are trees, not shrubs; he's saving those for his next book.

The A-Z encyclopedia—with some bunching of closely related genera—is written for horticulturists (not botanists!) in temperate zones and gives considerable gradation to cold-hardiness and other exacting cultural needs. For example, I learned that a favorite tree of mine from trips to the Southwest, the Texas mountain laurel (*Sophora secundiflora*), would "...experience imperceptibly slow growth, or even lose ground..." in my Seattle garden without heroic efforts to match its preferred "swamp-cooler" climate.

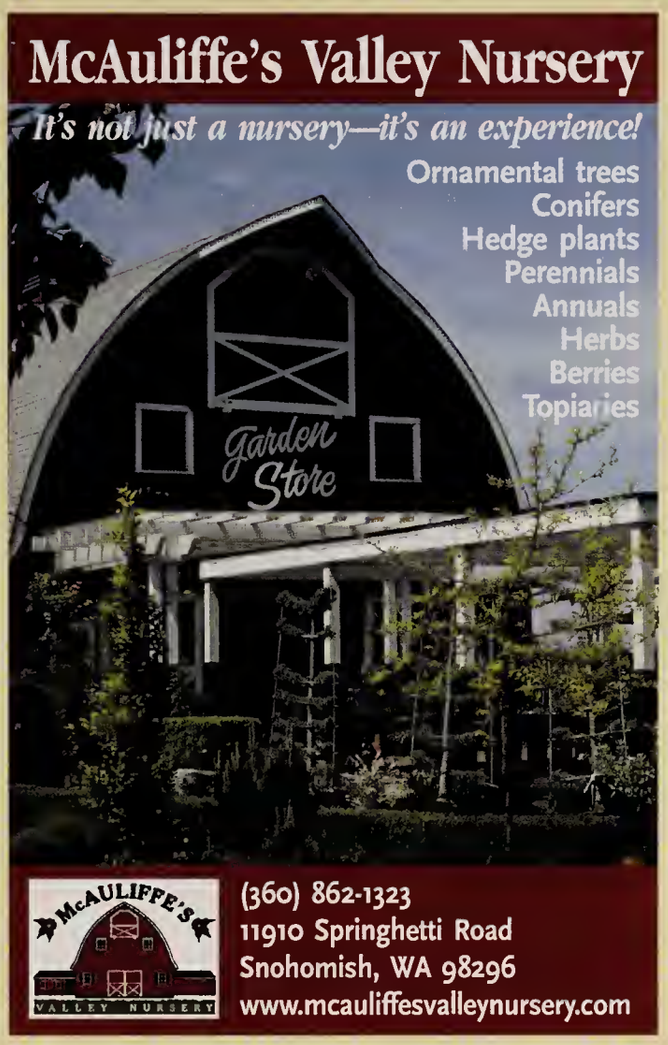
Always the nurseryman, Hogan gives detailed notes about propagation and the habits of young nursery stock, always written in an easy-to-understand manner. Need to propagate your olive? Historically this was done by "chopping the heavily burled bases into pieces, pulling chunks out of the ground, and then dragging them to the next area where, eventually, an olive tree would grow." He goes on to say that with less effort similar results can be obtained from well-ripened cuttings with a "high-ish level of hormone...along with a steep wound."

This book will certainly enhance your appreciation of the Arboretum's collection of broadleaved evergreens. Another excellent addition to the reference collection for woody plants is Dan Hinkley's new book, "The Explorer's Garden: Shrubs and Vines from the Four Corners of the World." A full review will be in the next issue of the "Bulletin."

■ Veggies

Lorene Edwards Forkner tackled a huge task. She took the 900-plus pages of the late Carla Emery's "The Encyclopedia of Country Living" and distilled out of this sometimes-wandering magnum opus (in 10 editions over 35 years) the essentials of vegetable gardening.

The resulting "Growing Your Own Vegetables" is a well-organized and very



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readable work (at a comparatively slim 179 pages) that still captures the enthusiasm and down-to-earth charm of the original. While the authors both have Pacific Northwest roots, this book is written for a general audience, and so the section on okra is best skipped in planning your Seattle P-patch.

That said, there are still lots of useful and practical cultural tips. But I found it most charming in the somewhat quirky side boxes, such as that on Draft Horses and Power Tools: "Pat the animal and let it know you appreciate it after a good hard pull."

■ Climate

Briefly, gardeners should read "The Weather of the Pacific Northwest" by Cliff Mass, as the local weather is our constant companion. While this doesn't specifically address the concerns of gardeners, it will help you make sense of forecasts and appreciate the unpredictability of our weather.

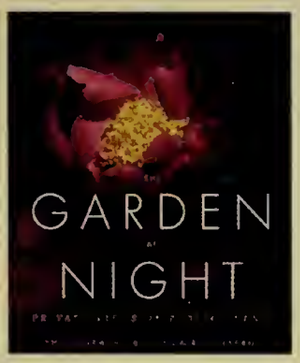
Helping you cope with that unpredictability is the "Timber Press Guide to Gardening in the Pacific Northwest," in which Carol and Norman Hall give considerable detail and nuance specific to weather, climate and other local factors affecting gardens west of the Cascades. Tracy Mehlin reviewed this excellent new general reference work in the Winter 2009 "Bulletin."

"The Northwest Green Home Primer" is another complementary book for planning your garden. While the emphasis is on the home, a chapter entitled "Site Choices" has good advice for the surrounding landscaping—especially how and where to plant trees—and briefly addresses other green practices, such as rain gardens, designed to maximize the use of runoff.

■ Just for fun

As a resident of Montréal, Linda Rutenberg does not qualify as a Pacific Northwest author, but the collection of her photographs in the 2007 publication of "The Garden at Night:

Private Views of Public Eden" includes Pacific Northwest subjects. The Washington Park Arboretum and Butchart Gardens are both featured, as are several other West Coast gardens. The Italian Garden at Butchart is particularly enchanting at night, and one simply must experience Azalea Way—after dark!



All of these books are available to read, and most to check out, at the Elisabeth C. Miller Library. Many can be purchased from the Gift Shop at the Graham Visitors Center. It was another fine crop of new editions for Pacific Northwest gardeners this year...and several more are close-at-hand. Watch this column for updates! ~

Brian Thompson is the manager and curator of the Elisabeth C. Miller Library, University of Washington Botanic Gardens and a member of the "Bulletin" Editorial Board.

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